

ABSTRACT OF THE DISCLOSURE

A chemical substance detection sensor for improving detection stability, resistance to vibration, compactness, and sensitivity, wherein said sensor is comprised of optical waveguides for dividing and propagating light from a wavelength-tunable light source; a chamber for allowing a sample to flow through regions of two optical waveguides including ligands provided on one of the two optical waveguides, an optical combiner/splitter for combining and redividing the outputs from the two optical waveguides, and a detector for detecting a chemical substance contained in the sample under test by capturing the interference light output from the optical combiner/splitter. The operating point of this chemical substance detection sensor is adjusted by controlling the wavelength of the light source so as to equalize the outputs of two detectors separated by the optical combiner/splitter when the reference sample not containing the substance for detection flows into the chamber.